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Sanitary Entombment

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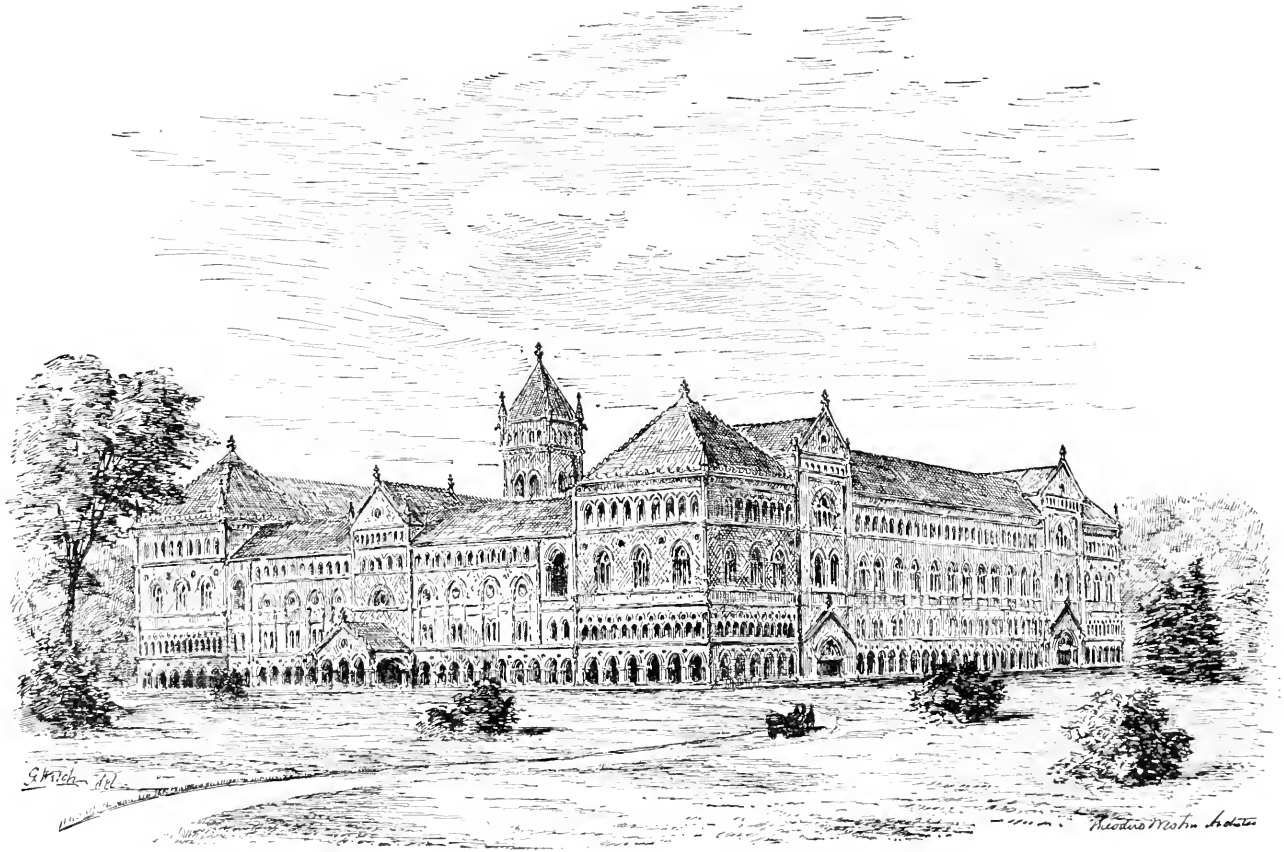


"CAMPO SANTO" FOR NEW YORK.

SANITARY ENTOMBMENT.

THE IDEAL DISPOSITION OF THE DEAD.*

By Rev. CHARLES R. TREAT, of New York.

IT is a strange thing that the time should have come to attack the churchyard in its use for the burial of the dead; but it is really far more strange that the churchyard should have come to be one of man's most deadly foes. This, however, every thoughtful man will now have to admit to be true, and this will make easy what otherwise would have been impossible for a tender or reverent mind.

As a general statement, it will suffice to quote the words with which Lord Beaconsfield denounced the churchyard, in the House of Lords, in 1880: "What is called 'God's Acre' is not adapted to the times in which we live or to the spirit of the age. The graveyard is an institution prejudicial to the public health; and the health of the people ought to be one of the considerations of a statesman. The time has arrived when a safer disposition of the dead should be instituted."

In view of such a statement, and of many more that come readily to mind that have been made in stronger terms, and most of all in view of the fact that the agitation against the churchyard has been maintained for more than a hundred years, it is amazing that this use should die so hard; and, as we survey the past, it will amaze us more, to be compelled to confess, that the church-

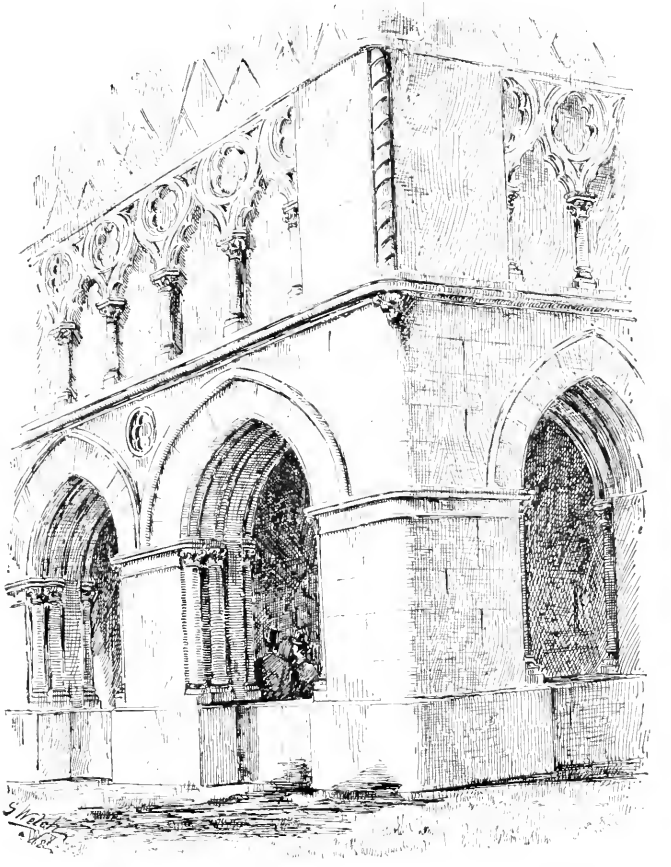
* Address elaborately illustrated by stereopticon, before the American Public Health Association, at Brooklyn, N. Y., October 23d, 1889.

yard has been made man's foe by civilized and Christian men! The story of this use of consecrated ground is so short that, although familiar, it may well be told again.

In the early Christian centuries, as in the centuries preceding, among men of all religious beliefs and practices, the conviction, both instinctive and founded on experience, prevailed, that the dead should not be brought into proximity with the living. Accordingly the practice definitely demanded by the "Twelve Tables" became universal, not to bury within a "city" or any group of human habitations. The first step in the wrong direction seems to have been taken at the dying request of the first Christian emperor, who was interred at the entrance of the Church of the Holy Apostles, in Constantinople. The tendency, however, to follow this example, and to secure similar interment in holy earth, was stubbornly resisted; and it was not until the latter part of the sixth century that burials were permitted within towns or cities, and it was not until the eleventh century that burials were permitted in churches. From this time the custom continued without notable interference, until the latter part of the last century. Then, in that era of tremendous change, the churchyard did not escape. In Paris, the churchyard of the Church of the Holy Innocents was first condemned in the interest of the public health, because much sickness had been traced to the foul stenches that rose therefrom; and it is worthy of special notice, as indicating the extent of the danger, that M. Thouret, the official charged with the duty of disinterring the dead, was overcome by the foul air that he was compelled to breathe, and barely escaped with his life from a putrid fever that he there contracted. A little later the grounds about the churches of St. Germain des Pres and St. Eustache were also barred from burial, and the contents of their graves were carried to the quarries that have since become the "Catacombs" of Paris. In Austria, under Joseph II., the ruler of such unhappy methods but of such noble aims and advanced ideas, the burial of the dead within or near to churches was prohibited by law, and this was such an honest enactment that neither rank nor wealth could evade it.

In England, unhappily, the progress of this reform was not so rapid. Bishop Latimer had soundly said, in a discourse upon the restoration to life of the widow's son at Nain: "The citizens of

Nain hadd their buryinge-place withoute the citie, which no doubt is a laudable thinge. And I do marvel that London, being soe great a citie, hath not a burial-place withoute. For no doubte it is an unwholesome thinge to bury within the citie, especiallie at such time when there be great sicknesses and many die together.



"CAMPO SANTO," AMBULATORY.

I think verilie that many taketh his death in St. Paul's churchyard. And this I speak of experience, for I myself, when I have been there some mornings, to heare the sermons, have felt such an unwholesome and ill-favoured savour, that I was the worse for it a while after, and I think no lesse but it is the occasion of great sicknesses and disease." And it is deserving of mention that Sir

Christopher Wren entreated the citizens of London, in rebuilding the city after the great fire of 1666, to put an end to the pernicious practice of burying within their churches and about them, and even within the limits of their city. But these appeals, and many more that were more urgent and more recent, were vain, and it was not until nearly the middle of our proud century that England would listen to the reformer of this crying evil.

In this country, partly because there were few places of large population, and partly because it was an early and general tendency to use cemeteries rather than churches and the grounds adjacent to them, the evils of earth-burial did not manifest themselves so soon or in so marked a manner as in the old world. But there were instances enough to convince the most incredulous that a radical change must be made. Dr. Ackerly, writing in 1822, thus describes the condition of the burial-ground connected with Trinity Church, New York, forty years before: "During the Revolutionary War this ground emitted pestilential vapors, the recollection of which is not obliterated from the memory of a number of living witnesses." In the same year the *Commercial Advertiser* published an article in reference to the present evils of earth-burial at the same place, in which it was said: "It will be remembered that the graveyard, being above the streets on the west and encompassed by a massive stone wall, and the east side being on a level with Broadway, it results that this body of earth, the surface of which has no declivity to carry off the rain, thus becomes a great reservoir of contaminating fluids suspended above the adjacent streets. In proof of this, it is stated that, in a house in Thames Street, springs of water pouring in from that ground occasioned the removal of the tenants on account of their exceeding fetidness." At a later date Dr. Elisha Harris brought this telling indictment against the same place of interment: "Trinity churchyard has been the centre of a very fatal prevalence of cholera, whenever the disease has occurred as an endemic near or within a quarter of a mile of it. Trinity Place west of it, Rector Street on its border, the streets west of Rector, and the occupants of the neighboring offices and commercial houses have suffered severely at each visitation of the pest, from 1832 to 1854." It seems hardly necessary to add that the foregoing statements are not intended to make the impression that there was a worse condition at the churchyard named than at any other. The

truth is, that this only illustrates what was universal throughout the city; and, in proof, it may be cited, among the unsavory recollections of the time, that the sexton of the "Brick Church," Beekman Street, was accustomed to caution the persons standing near, when a body was to be deposited in the vaults, saying:

"CAMPO SANTO," CLOISTER AND GLIMPSE OF COURT.

"Stand on one side. You are not accustomed to such smells!" And the sexton of the Dutch Church close by was known to have said that, when going down into the vaults, the candles lost their lustre, and that the air was "so sour and pungent that it stung his nose." Naturally, therefore, it was noted in the public press: "This being the case with all the vaults, where dead bodies are

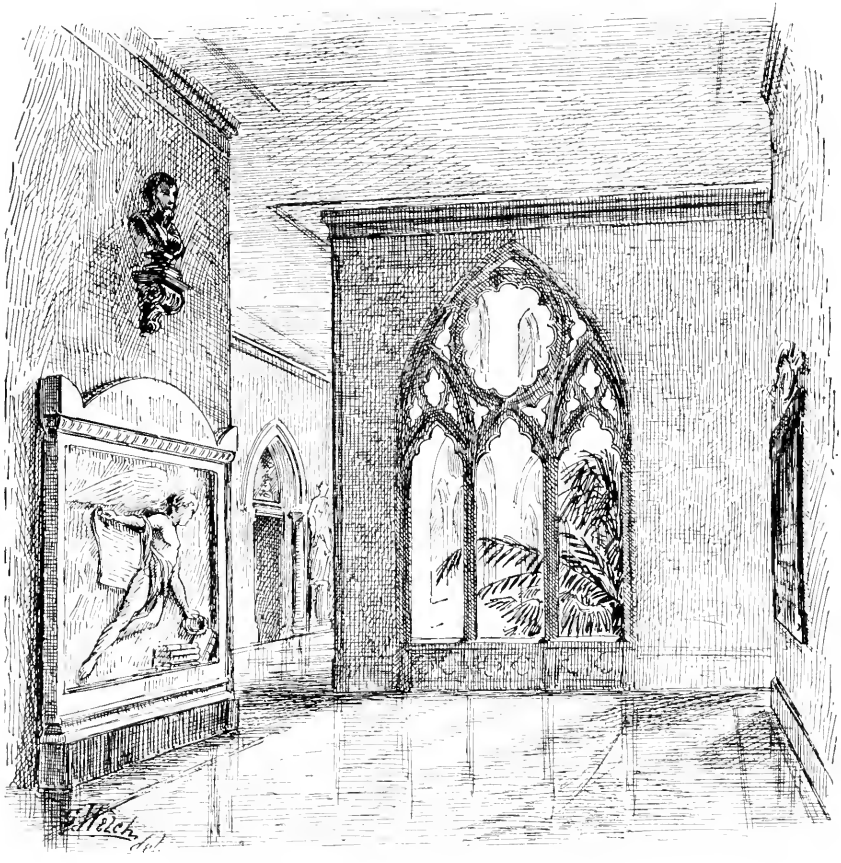
deposited and subject to be opened at all seasons, this method of disposing of the remains of our friends is at the least an unpleasant and certainly a dangerous one." And the result was to be expected, that the Board of Health should utter their official protest against the continuance of the perilous practice, as they did in 1806: "Interment of dead bodies within the city ought to be prohibited. A vast mass of decaying animal matter, produced by the superstition of interring dead bodies near the churches, and which has been accumulating for a long time, is now deposited in many of the most populous parts of the city. It is impossible that such a quantity of animal remains, even if placed at the greatest depth of interment commonly practised, should continue to be inoffensive or safe!"

It may now be said: "Yes, this is all true, but we have changed all that! We no longer inter our dead in churchyards or burial-grounds within the limits of cities. We have provided cemeteries at great distances from our cities and large centres of population, and there the dead can do no harm."

To this the reply is easy and convincing; that, if the dead endanger the living when the population is dense, they certainly also endanger them when the population is sparse. The danger is only diluted. It still exists, and it ought to alarm us just as truly when a few are imperilled as when many are. As lovers of our kind, as claiming to be humane, we can no more be indifferent to the danger of a few than to the danger of many. True philanthropy has no sliding scale by which to gauge her gifts. And if the evils of earth-burial issue from the fact that a lifeless body is buried in the earth, then these are not escaped and cannot be, unless the dead are buried at such a distance from the living that the living can never come into contact with the earth in which they lie, or breathe the air or drink the water which they pollute. Therefore, the question, as to the effect upon human health of our cemeteries, can be considered settled in the case of all that are not remote from the habitations or the approach of men; and such cemeteries, as we know, are few, and they are not the cemeteries which lie upon the borders of our great cities.

To strengthen this general position it will be sufficient to quote the familiar but weighty assertion of Sir Henry Thompson: "No dead body is ever placed in the soil without polluting the earth, the air, and the water above it and about it"; and the testimony

of Dr. Holland, who speaks as the opponent of this reform and the antagonist of Sir Henry Thompson, that the best situated cemeteries may be so mismanaged as to become unsafe; that cemeteries should not be too near dwellings; that they should not be overcrowded; that the soakage from them should be care-



"CAMPO SANTO," ANGLE OF CLOISTER.

fully guarded against; and that wells near burial-grounds are unfit sources of drinking water; and the declaration of the French Academy of Medicine, that the cemeteries of Père-la-Chaise, Montmartre, and Montparnasse, once suburban now intramural, are the cause of serious disorders of the head and throat and lungs, that result in the loss of many lives; and to note the ex-

perience of Brooklyn, half-girdled with graves, of which the editor of THE SANITARIAN does not hesitate to assert: "Typhoid-fever is, taking one year with another, increasingly prevalent in Brooklyn, and it is, in our judgment, probably due for the most part to sewage-pollution of the intensest and most loathsome kind—the seepage of graveyards!"

Thus far this subject has been treated as though the only evil influence that a decomposing body could exert would be through the poisonous character of the resultant compounds. Unhappily, the story is only partly told, and greater dangers remain to be revealed.

Within a few years it has become unquestioned that some of the deadliest diseases that attack mankind owe their origin and propagation to living organisms, and it may yet appear that the field of their operation is far wider than we now think. Not to attempt to tell all that has been ascertained, it will be sufficiently convincing to quote from Sir Henry Thompson's utterance in the *Nineteenth Century*, in 1880: "I state, as a fact of the highest importance, that, by burial in earth, we effectively provide—whatever sanitary precautions are taken by ventilation and drainage, whatever disinfection is applied after contagion has occurred—that the pestilential germs, which have destroyed the body in question, are thus so treasured and protected as to propagate and multiply, ready to reappear and work like ruin hereafter for others. . . . Beside anthrax, or splenic-fever, spores from which are notoriously brought to the surface from buried animals below and become fatal to the herds feeding there, it is now almost certain that malarious diseases, notably Roman-fever and even tetanus, are due to bacteria which flourish in the soil itself. The poisons of scarlet-fever, enteric-fever (typhoid), small-pox, diphtheria, and malignant cholera are undoubtedly transmissible through earth from the buried body." That the burial of a body which contains the seeds of zymotic disease, is simply storing them for future reproduction and destruction, is amply proven by the researches of Darwin and Pasteur; of whom the former has shown that the mould, or fertile upper layer of superficial soil, has largely acquired its character by its passage through the digestive tract of earthworms, and the latter, that this mould, when brought by this agency to the surface from subjacent soil that has been used as a grave, contains the specific germ of the disease that has destroyed its tenant.

We may fitly close this portion of the discussion with the conclusion, so strongly stated by Dr. James M. Kellar, in his report to the session of the American Public Health Association, at St. Louis, in 1884, which is far from an overstatement of the truth: "We believe that the horrid practice of earth-burial does more

"CAMPO SANTO," FAMILY COMPARTMENT.

to propagate the germs of disease and death, and to spread desolation and pestilence over the human race than all man's ingenuity and ignorance in every other custom."

It may now be asked: "Granting that these evils are inseparable from the burial of the dead in the earth or in tombs, what is the remedy? What else can be done?"

To this question not many answers can be given, because the modes of disposing of the dead have always been and must always be few.

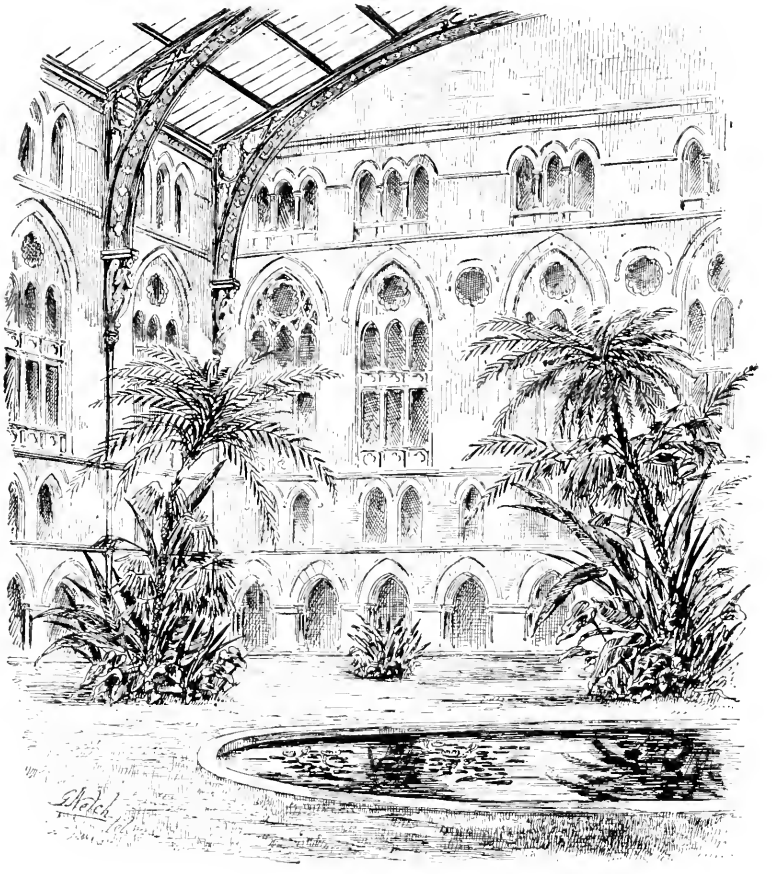
Plainly, no such novel mode as casting the dead into the sea will be generally adopted. Plainly, also, the mode of the Parsees, grounded as it is in ancient, if not original, use—to give the dead to beasts and birds—will not become universal. And, plainly also, cremation will not be welcome to the many, free as it is from objection on the score of public health, if a method equally sanitary, and at the same time satisfactory to a reverent and tender sentiment, can be devised.

The inquiry, then, has reached its limit. For, apart from the modes that have just been named, there are no others but earth-burial and entombment; and earth-burial, as we have seen, cannot be made sanitary under common conditions. Therefore, if the demands of affection and sanitation are both to be met, entombment is to do it, or it cannot be done.

Happily, better than any other method of disposing of the dead that has ever been devised, entombment has met the demand of affection. Never has any other mode so commended itself to men as this. There may have been at times a general adoption of cremation, and there may have been a general prevalence of earth-burial, but the one has not long satisfied the sorrowing survivors, and the other has owed its beginning and continuance to the apparent absence of alternative. Wherever the living have been able, and the dead have been dearly loved or highly esteemed, the tendency to entomb and not to bury has been constantly manifested.

To call attention to this tendency is enough to prove it, so easily accessible is the evidence and so familiar is its operation in the human heart. The most natural reference will be, first, to the Mausoleum, the tomb of Mausolus, that was erected by his sorrowing Queen, Artemisia, at Halicarnassus, upon the Ægean's eastern shore; and that became at once one of the few great wonders of the ancient world. This was intended to do honor to the loved and illustrious dead; and this it did, as no grave or pyre could do. This was also intended to protect the lifeless form from ruthless robbery and reckless profanation; and it performed this task so well that, for near two thousand years, no human eye beheld the mortal part of Mausolus and no human

hand disturbed its rest. At a far earlier time, Abraham, the Father of the Faithful, while he illustrated this tendency to entomb the dead, also offered an influential example to all who would do him reverence, as, in the hour of his great sorrow, he sought the seclusion and the security of Machpelah's cave for the



"CAMPO SANTO," INNER COURT.

last earthly resting-place of his beloved wife. There he buried Sarah; there he and his son and his son's son and their wives were all laid to rest, and the place of their repose hath not been violated even at this distant day. To this constant tendency constant testimony is borne by the massive and magnificent tombs in which India abounds, the tombs and pyramids that

make marvellous the land of the Nile, the tombs that stood thick upon the Appian Way and that rose superb upon the Tiber's shore, the modern use to which the Pantheon is put, the Pantheon at Paris and the Crypt of the Invalides, the Abbey of Westminster matchless in memorials, the sepulchres within the hills that gird Jerusalem, and the sepulchre in which the Nazerene was gently laid when His agony was ended.

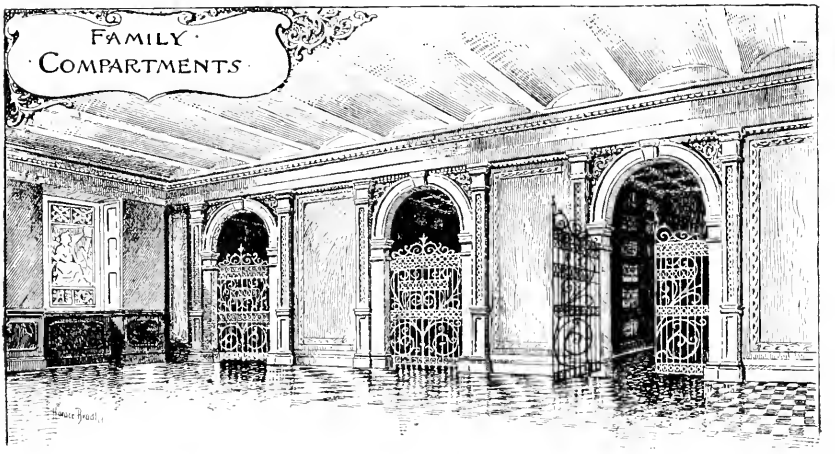
It remains to consider whether entombment can be made sanitary; if it can be, the problem is solved, for entombment has ever been the best that the living could do for their dead, and, with the added advantage of promoting, or ceasing to be prejudicial to, the public health, entombment will be the choice of all whom cost or caprice does not deter.

That entombment can be made sanitary is evident from the fact that, in countless instances, in many lands and through long periods of time, it has been made sanitary by the ingenuity of man or by unassisted nature; and it is also evident from the fact that decomposition and disease germs are the dangers to be guarded against, and that against these both ancient and modern science have been able to guard. Not to enumerate all the modes that have been chanced upon or that have been devised by men, there are two that have been notable and are available for modern use—embalming and desiccation.

It is a delusion to imagine that embalming is a lost art; that, like some other marvels of the ancient time, this is a secret process that perished with the people that employed it. Did we desire it, we could embalm our princes and our priests, and retain their shrunken similitudes for distant coming times to gaze and gape upon, as skilfully as they who practised this art in Egypt's palmiest days. Nay, it is doubtless far within the truth to claim that, better than they did we could do; and we are actually apprised of better methods and results than they employed or could attain, and it is not unlikely that we shall hear of better methods still in the near future. But Egypt's method, will hardly now be popular. It involves too much mutilation and too much transformation. When it has done its work little is left but bone and muscular tissue, and these are so transfused with foreign substances, that a form moulded from plastic matter or sculptured from stone could almost as truly be considered that of the lamented dead as this. Moreover, indefinite preservation of

the dead is not desirable, and is not desired. The uses to which the Egyptian Pharaohs and their humbler subjects have been put in these days of indelicacy and unscrupulousness in the pursuit of science or sordid gain, are not such as to make many eager to be preserved for a similar disposition, when the present shall have become a similarly distant past.

Desiccation, in striking contrast with embalming, is the process of nature rather than of art; and involves no mutilation and no substitution of foreign substances for human flesh; and does not by unnatural means preserve the semblance of the human form so long that a susceptible sentiment is shocked and a due return of material humanity to the elements that gave it



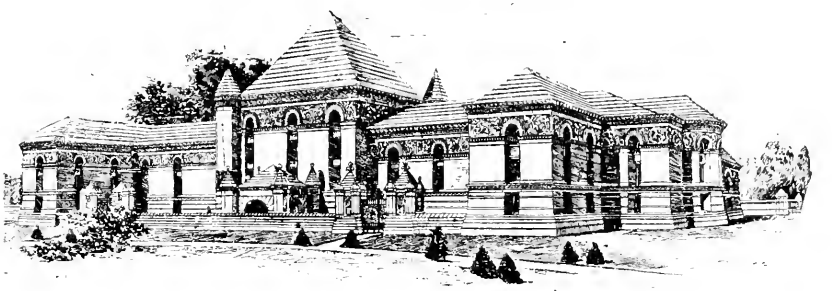
birth prevented. Desiccation is so far a natural process, that it seems not to have been thought of, until nature had done the work and shown the product; and through many centuries, and upon an extensive scale, nature had employed the process before it occurred to man to copy her, and adopt her method for the disposition of his dead.

Wherever the air that enwrapped the lifeless form of man or beast was dry, desiccation anticipated and prevented decomposition. In deserts, upon elevated plains, upon the slopes of lofty mountain ranges, to which the winds that passed their summits bore no moisture, the dead have not decayed, but have dried undecomposed. In the morgue attached to the Hospice of St.

Bernard, the dead, lifted too late from their shroud of snow and borne thither to await the recognition of their friends, dry and do not decay. In the "Catacombs" of the monastery of the Capuchins at Palermo, and in the "Bleikeller" at Bremen, the same phenomenon has appeared. Even Egypt is a confirmation of these statements, for it is probable that, had much less care been taken to preserve the dead, they would not there have yielded to decay as in other lands; and that moisture is so far absent from the atmosphere that the dead would have been preserved from decay by desiccation had not embalming been resorted to. Upon the elevated western plains of this continent, the bodies of beasts and men, by thousands, have been preserved from decomposition by desiccation. To take one instance out of many that might be cited: A cave was not long ago discovered high up among the Sierra Madre Mountains within which were found, where they had rested undisturbed for many years, the lifeless figures of a little aboriginal household, dried and undecayed. Father, mother, son and daughter, one by one, as death had overtaken them, had been brought thither, bound so as to keep in death the attitude that had marked them when at their rest in life, and there they bore their silent but impressive witness to the beneficent action of the unmoist air that had stayed decay and kept them innocuous to the living that survived them. In Peru, instances of this simple, wholesome process abound on almost every side; upon the elevated plains and heights, as also beside the sea, the dead of Inca lineage, with the lowliest of their subjects, are found in uncounted numbers, testifying that in their death they did not injure the living, because desiccation saved them from decomposition; and a recent traveller has vividly described the scene that a battle-field of the late war presents, and that illustrates the same process, where, though years have passed since the last harsh sound of strife was heard, the fierce and bitter combatants, still seem eager to rush to conflict or to sink reluctant into the embrace of death. And all these instances furnish conclusive proof that decomposition can be controlled, and that its loathsome and unwholesome transformations can be prevented, if only the simple conditions are secured that have already so extensively effected this result. That these conditions can be secured no one can doubt; for, every day, in almost every clime, by processes familiar and available to man, the atmosphere has moisture added

to it or taken from it; and the extraction of the moisture from a portion of the atmosphere is all that is required to introduce the process of Peruvian desiccation into the sepulchres of Chicago or New York.

It will naturally be further asked, "Is this all that has been done to demonstrate the efficiency and availability of desiccation for the dead?" To this the answer would be sufficient that the evidence that has been adduced is ample; and that, at once, in perfect confidence as to the result, mausoleums might be erected, with provision for the withdrawal of the moisture from the atmosphere and for the passage of the desiccated air through the sepulchres in which the dead should rest. So little is involved, and so much has been accomplished without the application of any human skill, that it seems inevitable that, as soon as the resources of modern architecture and sanitary science are drawn



upon, the desired result will be at once attained. But, to make assurance doubly sure, several carefully conducted experiments have been made, under the supervision of the directors of the New Mausoleum movement, that prove that the conditions of desiccation can be controlled, and that decomposition can be prevented, that where it has begun it can be stayed, and that prolonged preservation, with a fair approximation to the appearance in life, can be made sure, for the recognition of absent friends, for transportation, or for the furtherance of the ends of justice, although through the operation of natural laws the body will ultimately crumble to dust.

When, now, it is added, that desiccation has been ascertained to be an efficient agent in the destruction of disease germs, as proved by the experiments of Dr. Sternberg, of the Hoagland Laboratory, and by the investigations of other experts, enough

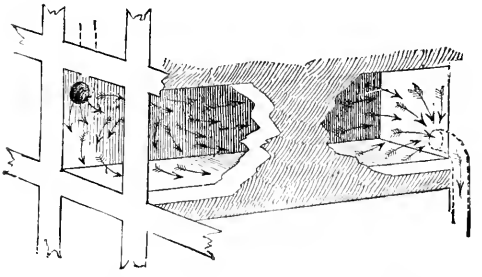
seems to have been said to establish the truth of the assertion, that entombment can be made sanitary, and that, therefore, entombment offers the satisfactory solution of the problem, how to dispose of the dead so as to do no violence to a reverent and tender sentiment, and at the same time not to imperil the public health.

The proposition, then, soon to be submitted for public approval is this: To perpetuate the tomb, the preferred depository of the dead throughout the past; to enlarge it, beautify it, and make it sanitary; and to bring it within the reach of all who would thus honor and care for their dead. Such tombs can be inexpensive and plain; and it seems not too much to hope that our cities will soon adopt this mode of disposing of the dead that depend upon the public care for burial, and that the horrors of a "Potter's Field," of which it cannot be divested, even in a fair and sea-girt isle, may be forevermore unknown of men.

All these structures, however, will not need to be inexpensive and plain. Many of them, as the rich shall lavish their wealth upon them, will be spacious and splendid, as no tombs of earlier time have ever been. These will naturally differ in design and plan, and while one will incline to one order of architecture another will incline to another; one will incline to the light and graceful style of the Greeks, another to the substantial and enduring Roman type, another to the still more firmly built and time-defying type of the Egyptians, another to the rich and exquisitely decorative Byzantine style, and another to the Gothic type, with its suggestions of spiritual aspiration and heaven-sent consolation and heaven-born peace. It should certainly be the architect's study to avoid, as either of these styles is adopted, the appearance of edifices with familiar and established secular or sacred uses. These must, if possible, be so designed as to speak of repose and loving care and undying recollection, and should appear to be homes for the dead, and yet temporary habitations in which they only rest until the resurrection.

Perhaps the most favored style will be that of the "Campo Santo," like that at Pisa, where the Holy Field lies light upon the dead, and where the softened sunshine and the tempered wind and the hushed notes of happy birds and the sweet seclusion of the spacious and graceful Gothic cloister, with its memorials of

many who have been loved and lamented, and its rare pictorial teaching of the life to come, all speak soothingly of hope and peace and comfort. Such a "Campo Santo," modified to meet the demands of modern life and art, might well be one of the crowning monuments even of this wondrously achieving age. To what a grand and noble consummation would it seem to lead the race in their efforts for a fitting disposition of their dead! And what honor would it reflect upon the men who should erect it and place it at the command of their fellows, in due regard for what both health and heart require!



Within, there would be, as the unit of construction, each *sepulchre so constructed that air, from which a sufficient portion of its moisture had been abstracted, would be made to enter, and to withdraw, laden with moisture and morbific matter, which it would convey to a separate edifice, where a furnace would complete the sanitary work that the anhydrous air had begun, and return to the external atmosphere nothing that would be noxious.* Each sepulchre would be constructed of concrete, and would thus be without seam or joint, and would not permit the escape of any noxious matter in any other direction than through the conduit to the purifying furnace. Each sepulchre, closed to all except official inspection, would appear to provide a place of seclusion and repose, and would promise the most perfect protection against intrusion or theft that can be found on earth; it would also be fitted with electrical appliances for the instant indication of the return of consciousness to any who had been prematurely entombed. A "Perpetual Care-Fund" would insure an ample income, with which these, and every other reverent and beneficent provision, would be made permanent. In arrangement these sepulchres would have to conform to the price paid and the taste of the purchaser. Many would be like the single graves that thickly ridge portions of our cemeteries; many more would be grouped together after the semblance of a family-tomb, as in the illustration; but in the general impression, in the surroundings and suggestions, the

resemblance to the provisions of a cemetery would go no farther. For here, there could be no burning sun, no chilling cold, no inclement storm; for the living, as they should pay the last sad honor to the dead, or in any subsequent tribute of affection, there could be no exposure, and for the dead, there would be only the constant semblance of the comfort, the quiet, and the seclusion of the best-ordered home. Thus, in providing the utmost that exacting affection and sanitary science can require, and in taxing to the utmost the resources of art, in architecture, in sculpture, and in the use of subdued and according hues and forms for appropriate decoration, these "Campo-Santos," or "Mausoleums," or "Mansions of the Dead," will seem to have realized the ideal disposition of the mortal remains of those who depart this life.

In conclusion, it is evident that the present modes of disposing of the dead are unscientific, unwholesome, repulsive, and, in a word, unworthy of this enlightened age.

On the other hand, it is apparent that the New Mausoleum method of disposing of the dead affords relief from all these obnoxious features, inasmuch as it provides for the perpetual care of the dead; protects from premature interment; protects the dead from theft; protects the living from exposure, while paying the last duty to the dead; meets the demand of the most reverent and tender sentiment; meets the urgent sanitary demand that the dead shall not endanger the living; meets the medico-legal demand that the evidence of crime shall not be destroyed; and costs less, in view of its manifold advantages.

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